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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/085,670	02/27/2002	Tony S. Kaushal	5969	8658

32588 7590 07/30/2003

APPLIED MATERIALS, INC.  
2881 SCOTT BLVD. M/S 2061  
SANTA CLARA, CA 95050

EXAMINER
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MOORE, KARLA A

ART UNIT	PAPER NUMBER
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1763

DATE MAILED: 07/30/2003

4

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application N .

10/085,670

Applicant(s)

KAUSHAL ET AL.

Examiner

Karla Moore

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 2-27-02
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) 14 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-6 is/are allowed.
- 6) ☒ Claim(s) 7-13 and 15-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☒ Claim(s) 1-20 are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 February 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## DETAILED ACTION

### *Election/Restrictions*

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:
  - I. Claims 1-13 and 15-20, drawn to a component of a plasma reactor chamber for processing a semiconductor workpiece, classified in class 118, subclass 723R.
  - II. Claim 14, drawn to a monolithic ceramic component of a plasma reactor chamber for processing a semiconductor workpiece, said component produced by a particular process, classified in class 118, subclass 723R.

The inventions are distinct, each from the other because of the following reasons:

2. Inventions II and I are related as product by process and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make other and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case, the product can be made by another materially different process, such as one, using different mole percentages than what is claimed in the product by process claim.
3. Because these inventions are distinct for the reasons given above and the search required for Group I is not required for Group II, restriction for examination purposes as indicated is proper.
4. During a telephone conversation with Mr. Robert Wallace on 15 July 2003 a provisional election was made without traverse to prosecute the invention of Group I, claims 1-13 and 15-20. Affirmation of this election must be made by applicant in replying to this Office action. Claim 14 is withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.
5. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 7, 10, 13, 15, 17 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,902,763 to Waku et al. in view of U.S. Patent Publication No. 2003/0049499 to Murakawa et al.

8. Waku et al. disclose a ceramic composite for processing in a corrosive environment (column 5, rows 25-30), said component comprising a monolithic ceramic piece constituting a mixture of yttrium aluminum perovskite (YAP) and yttrium aluminum garnet (YAG) (abstract; column 3, row 8; column 4, rows 28-30; and column 4, rows 43-44).

9. Specifically, Waku teaches that a novel ceramic composite with corrosion resistance may be formed by at least two crystal phases of oxides selected from metal oxides and complex metal oxides, except for the combination of alumina and yttrium oxide (abstract). Yttrium aluminum oxide is taught to be one of the complex metal oxides that can be used in the invention (column 3, row 8). Waku et al. further teaches that the inclusion of an oxide having a perovskite structure results in an enhanced mechanical strength (column 4, rows 28-30) and that inclusion of an oxide having a garnet structure can have an improved creep resistance (column 4, rows 43-44).

10. However, Waku et al. do not disclose the composite for use in a plasma reactor.

11. Murakawa et al. teach the use of a corrosion resisting ceramic material having a high resistance to corrosive halogen-based gases and, more particularly, to a halogen-plasma resisting member in a semiconductor plasma processing apparatus for the purpose of protection against exposure to the plasma of a corrosive halogen gas (paragraphs 0002 and 0005).

12. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided a semiconductor plasma environment as the environment for the corrosion

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resistant composite member in Waku et al. in order to take advantage of a the materials corrosion resistance capabilities as taught by Murakawa et al.

13. With respect to claim 7, Waku et al. disclose several examples of the novel ceramic composite and that the composites have excellent mechanical properties (column 2, rows 39-46). One of the examples has a fracture toughness of  $10 \text{ MPa}\sqrt{\text{m}}$  (column 20, rows 30-32), which is above a fracture toughness requirement for machinability. One of ordinary skill in the art would conclude that other ceramic composites produced according to the invention, such as the one mentioned above and in Applicant's claims, would have similar fracture toughness.

14. With respect to claim 10, the type of ratio used to measure the mixture, without a corresponding numerical value, is not a structural limitation. As the presently elected claims are drawn to an apparatus, the claimed limitation is not treated any further then mentioned above in claim 7, where it is claimed that the ratio is such that a fracture toughness is produced that is appropriate for machining.

15. With respect to claims 13 and 19, Murakawa et al discloses the walls of a semiconductor plasma processing chamber are exposed to plasma and should therefore comprise a corrosion resistant material (paragraph 0010).

16. With respect to claim 17, Examiner has interpreted the claim to mean that the ratio of YAG and YAP ranges between 0:100 and 100:0, which would necessarily be the case.

17. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Waku et al. and Murakawa et al. as applied to claims 15, 17 and 19 above, and further in view of U.S. Patent Publication No. 2003/0064225 to Ohashi et al.

18. Waku et al. and Murakawa et al. disclose the invention substantially as claimed and as described above.

19. However, Waku et al. and Murakawa et al. fail to teach the ceramic composite is a ring surrounding a wafer support pedestal within the chamber.

20. Ohashi et al. teach that the use of a surrounding ring for a wafer support pedestal (Figure 6, 36) with corrosion resistant properties in order that the ring does not generate impurities with exposure to a corrosive atmosphere (paragraph 0018).

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21. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided a surrounding ring with corrosion resistance in Waku et al. and Murakawa et al. in order to prevent the generation of impurities with exposure to a corrosive atmosphere as taught by Ohashi et al.

#### ***Allowable Subject Matter***

22. Claims 1-6 are allowed.

23. The following is an examiner's statement of reasons for allowance: Claims 1-6 includes a specific ratio of YAP to YAG for the component that is not taught or fairly suggested in the prior art.

24. Claims 8-9, 11-12, 16 and 20 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

25. The following is a statement of reasons for the indication of allowable subject matter: Claims 8-9, 11 and 16 also include a specific ratio of YAP to YAG for the component that is not taught or fairly suggested in the prior art. Claim 12 includes a limitation drawn to a specific fracture toughness value, which is not taught or fairly suggested in the prior art. With respect to Claim 20, the prior art fails to teach or fairly suggest a piece comprising an array of YAG grains and YAP grains in which cracks propagate transgranularly across the YAG grains and intragranularly within the YAP grains.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

#### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Karla Moore whose telephone number is 703.305.3142. The examiner can normally be reached on Monday-Friday, 8:30am-5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory Mills can be reached on 703.308.1633. The fax phone numbers for the organization where this

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application or proceeding is assigned are 703.872.9310 for regular communications and 703.872.9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703.308.0661.

km  
July 24, 2003

*primary Examiner  
AU 1763  
P. Hanonjed*